

BUREAU OF INDIAN STANDARDS**AGENDA**

Panel for Panel for Prefabrication and Systems : Fifth Meeting
Buildings, CED 46:P10
Thursday, 02 April 2024 : 1030 h

In Hybrid Mode from:

Dr Lal C Verman (Conference Hall), Bureau of Indian Standards, Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110 002

Online Using:

- 1) Meeting link:
<https://bismanak.webex.com/bismanak/j.php?MTID=m732447bd2a8bd0c5f1dd5bfea1a67bc2>
- 2) Meeting number: 2514 281 0018
- 3) Password: Nbc@2025

Convener: Shri K. Senou **NBC Officer:** Shri Abhishek Pal
Head (NBC Cell): Shri Arunkumar S.

Item 0 OPENING REMARKS**Item 1 CONFIRMATION OF MINUTES OF THE LAST MEETING**

1.1 The Minutes of the fourth meeting of the Panel held on 27 October 2015 in New Delhi, were circulated vide BIS DG letter No. CED 46:P10/A-2.4 dated 24 January 2016. No comments have been received. *Infact, based on the meeting the National Building Code Sectional Committee, CED 46 accepted the recommendations and finalized the revision based on which the NBC 2016 was released.*

The Panel may **CONFIRM** the Minutes.

Item 2 COMPOSITION

2.1 The present composition of the Panel as reconstituted by the National Building Code Sectional Committee, CED 46 is given at **Annex 1 (P-6)**.

The Panel may **CONSIDER**.

2.2 The Panel may also **NOTE** regarding the Structural Reforms in Standardization established by BIS to bring greater efficiency in standards formulation and revision work in BIS addressing speed, skill and scale. The same relates to aspect like:

- a) technical committees of BIS having members with widely acknowledged domain area expertise and experience on the subjects
- b) optimum size of the technical committee
- c) review of membership with focus on continuity of participation including contribution by every member
- d) holding periodic meetings (physical/virtual/hybrid)
- e) decide on timelines to enable stage-wise development of the documents (draft standards)
- f) resource centre to enable share the information and documents associated with the standardization work

2.3 Further, BIS has established in place systems such as action research projects, R&D for standards development and provision for having short-term Consultants. Also, focus should be made w.r.t developments on the subject happening world-wide including in technical events, literature, research publications, standard bodies, etc. Wherever possible research based inputs be generated including by associating with [the various eminent institutions](#) with whom BIS has entered into MoU with.

The Panel may **NOTE**.

Item 3 PROJECT OF REVISION OF NBC

3.1 Under the project of Revision of NBC, various Parts/Sections of NBC 2016 [a list of which is given in **Annex 2 (P-8)**] are being comprehensively revised, to bring out a most modern and state-of-the-art revision of the Code.

The Panel may consider revising the chapter (**Part 6/Sec 7 on Prefabrication, Systems Building and Mixed/Composite Construction**) taking into cognizance the latest developments in the field. In the revision exercise, due consideration may be given to ensuring coherence among various chapters of the Code. Where required, suggestions for improvements in the other chapters of the code may also be provided.

The Panel may **NOTE**

3.2 The Panel may therefore engage in a high-level review of the existing chapter namely 'Prefabrication, Systems Building and Mixed/Composite Construction'. The contents of existing Part 6/Sec 7 'Prefabrication, Systems Building and Mixed/Composite Construction: 7A Prefabricated Concrete' is given in **Annex 3 (P-10)** and Part 6/Sec 7 'Prefabrication, Systems Building and Mixed/Composite Construction: 7B Systems Building and Mixed/Composite Construction' is given in **Annex 4 (P-11)**. This review may involve an examination of the structure, content, and alignment of the chapters with current industry standards and practices.

The Panel may **CONSIDER**.

3.3 To facilitate the revision process, the following working draft has been prepared and circulated to the members for their comments vide our email dated 28 March 2024:

*Working Draft of National Building Code of India: Part 6 'Structural Design/Section 7 'Prefabrication and Systems Building and Mixed/Composite Construction':
7A 'Prefabricated Concrete' Doc: **CED 46 (0285)WD** and
7B 'Systems Building and Mixed/Composite Construction', Doc: **CED 46 (0286)WD***

While preparing the above draft, references to various standards have been updated by including the latest versions of the cross referred standard.

Comments received on the drafts would be circulated (separately) among the members and also discussed during the meeting.

The Panel may **CONSIDER**.

Item 4 COMMENTS RECEIVED ON / INPUTS RELATED TO PART 6 'STRUCTURAL DESIGN' / SECTION 7 'PREFABRICATION AND SYSTEMS BUILDING AND MIXED/COMPOSITE CONSTRUCTION' OF SP 7 : 2016

4.1 No comments were received on the above Chapters of NBC 2016.

The Panel may **NOTE**.

Item 5 PROJECT OF PROMOTION OF USE OF NBC 2016 IN ALL STATES AND UTs OF INDIA

5.1 An ambitious Project for Promotion of use of National Building Code of India 2016 in all States and UTs of India was earlier taken up by BIS involving a comprehensive study and review of rules and regulations governing land development and building construction in various states and union territories of India. The Project involves preparing draft regulations which are aligned with provisions in National Building Code of India 2016 (NBC 2016), for use by the States and UTs in revising their existing regulatory documents in line with the revised state-of-the-art NBC 2016. The Project had 09 deliverables as below:

SI No.	Deliverable
1	Compilation and study of existing processes, rules and regulations as existing in various States and UTs which govern the land development and building construction, and other statutory provisions which have to be complied with currently, etc

2	Classification of the Provisions in various Rules and Regulations as mandatory/recommendatory, identification of commonalities/dissimilarities, conflicts, if any
3	Mapping the existing Rules, Regulations, Processes against provisions given in NBC 2016
4	Identification of other best practices which may currently not be a part of the existing rules or of NBC 2016, which may be aspirational but will help further the Aim/Objective of this project
5	Preparation of a draft revised standardized/model Rules and Regulations aligned with the provisions of NBC 2016, for the consideration of the Bureau
6	Preparing State/UT-wise standardized/model regulatory documents, including such required documents for some metro/mega cities, which can be adopted by various authorities & obtaining approval of the Bureau as per scope of work
7	Creating pamphlets for an awareness campaign for general public
8	Creating a simplified booklet on using NBC which can be used by all stakeholders-academicians, students and professionals
9	Dissemination to designated States/UTs, the knowledge base created and presenting to them advantages of adopting the same through meetings and workshops

With the support of an external consultant, the main deliverable namely Draft Development and Building Regulations for each of the States and UTs of India was prepared. Followed by 20 number of 2-day workshops covering all the States and UTs, the inputs received as part of such workshops, the finalized regulations were shared with the respective States & UTs.

In addition, a new special publication, **SP 73 : 2023 'Standardized Development and Building Regulations, 2023'** was also published and released, which is available for access (free download) from the BIS' website and from: <https://standardsbis.bsbedge.com/>

The Panel may **NOTE**.

Item 6 DATE & PLACE OF THE NEXT MEETING

Item 7 ANY OTHER BUSINESS

ANNEX 1
(Item 2.1)

**COMPOSITION OF THE PANEL FOR PREFABRICATION AND SYSTEMS
BUILDINGS, CED 46:P10**

Sl No.	NAME OF THE ORGANISATION	REPRESENTED BY
1)	Larsen & Toubro Limited, Chennai	Shri K. Senou (Convener)
2)	Adlakha Associates Pvt Ltd, New Delhi	Shri P. K. Adlakha
3)	B.G. Shirke Construction Technology Pvt Ltd, Pune	Shri Yogesh P. Kajale Shri Sanjay M. Adsar (Alternate)
4)	Building Materials and Technology Promotion Council, New Delhi	Shri C. N. Jha
5)	Central Public Works Department, New Delhi	Shri Prem Mohan Shri Dinesh Kumar Ujjainia (Alternate)
6)	Creative Consultants & Engineers Pvt Ltd, Ghaziabad	Shri Aman Deep
7)	CSIR - Central Building Research Institute, Roorkee	Shri A.P. Chaurasia Dr R. Siva Chidanbaram (Alternate I) Shri Siddharth Behera (Alternate II)
8)	CSIR - Structural Engineering Research Centre, Chennai	Dr J. Prabakar Dr K.N. Lakshmi Kandhan (Alternate I) Shri A. M. Sarath (Alternate II)
9)	Delhi Development Authority, New Delhi	Shri Ajay Kumar Agrawal Shri A. K. Singhal (Alternate)
10)	Indian Institute of Technology Madras, Chennai	Nomination Awaited
11)	Indian Association of Structural Engineers, New Delhi	Dr Mahesh Tandon Shri Alok Bhowmick (Alternate)
12)	Indian Concrete Institute, Chennai	Shri Rajkumar Pillai
13)	Institute for Steel Development and Growth, Kolkata	Shri Arijit Guha
14)	Interarch Building Products Pvt Ltd, Noida	Shri Manish Kumar Garg Shri Gautam Suri (Alternate)
15)	Kirby Building Systems India Ltd, Hyderabad	Nomination Awaited
16)	Larsen & Toubro Limited, Chennai	Shri S. Veeramani Shri C. K. Somaraju (Alternate)
17)	Lloyd Insulations (India) Ltd, New Delhi	Shri Ajay Singh Shri Jitendra Kumar Jain (Alternate)
18)	Military Engineer Services, Engineer-in-Chief's Branch, Army HQ, New Delhi	Brig Ravi Reddy Col Jassar S. M. (Alternate)
19)	National Council for Cement and Building Materials, Ballabgarh	Shri Amit Trivedi Shri B. P. Ranga Rao (Alternate)
20)	PEB Manufacturers Association, Navi Mumbai	Nomination Awaited
21)	Pranav Construction Systems Pvt Ltd, Navi Mumbai	Nomination Awaited
22)	Shirish Patel and Associates Consultants Pvt Ltd, Mumbai	Shri Shirish B. Patel Shri P. H. Srinivasachar (Alternate)
23)	Systems Building Technologists, New Delhi	Shri G. B. Singh
24)	Tata Bluescope Steel Ltd, Pune	Shri Krishnakant Rane

SI No.	NAME OF THE ORGANISATION	REPRESENTED BY
25)	The Indian Institute of Architects, Mumbai	Shri Chamarthi Rajendra Raju Shri Kurian George (Alternate I) Smt Vibha Shrivastava (Alternate II)
26)	The Institution of Engineers (India), Kolkata	Dr R. K. Bhandari Shri Hemant S. Vadalkar (Alternate)

ANNEX 2
(Item 3.1)

Details of Chapters of NBC 2016

<i>Part/Section</i>	<i>Title</i>
1 PART 0	INTEGRATED APPROACH – A PRE-REQUISITE FOR APPLYING THE PROVISIONS OF THE CODE
2..... PART 1	DEFINITIONS
3..... PART 2	ADMINISTRATION
4..... PART 3	DEVELOPMENT CONTROL RULES AND GENERAL BUILDING REQUIREMENTS
5..... PART 4	FIRE AND LIFE SAFETY
6..... PART 5	BUILDING MATERIALS
PART 6	STRUCTURAL DESIGN
7.....	Section 1 Loads, Forces and Effects
8.....	Section 2 Soils and Foundations
	Section 3 Timber and Bamboo
9.....	3A Timber
10.....	3B Bamboo
11.....	Section 4 Masonry
	Section 5 Concrete
12.....	5A Plain and Reinforced Concrete
13.....	5B Prestressed Concrete
14.....	Section 6 Steel
	Section 7 Prefabrication and Systems Building and Mixed/Composite Construction
15.....	7A Prefabricated Concrete
16.....	7B Systems Building and Mixed/Composite Construction
17.....	Section 8 Glass and Glazing
18..... PART 7	CONSTRUCTIONAL PRACTICES AND SAFETY
PART 8	BUILDING SERVICES
19.....	Section 1 Lighting and Ventilation
20.....	Section 2 Electrical and Allied Installations
21.....	Section 3 Air-conditioning, Heating and Mechanical Ventilation
22.....	Section 4 Acoustics, Sound Insulation and Noise Control
	Section 5 Installation of Lifts and Escalators and Moving Walks
23.....	5A Lifts
24.....	5B Escalators and Moving Walks
25.....	Section 6 Information and Communication Enabled Installations
PART 9	PLUMBING SERVICES
26.....	Section 1 Water Supply
27.....	Section 2 Drainage and Sanitation

- 28..... Section 3 Solid Waste Management
- 29..... Section 4 Gas Supply

PART 10 LANDSCAPING, SIGNS AND OUTDOOR DISPLAY STRUCTURES

- 30..... Section 1 Landscape Planning, Design and Development
- 31..... Section 2 Signs and Outdoor Display Structures

32..... PART 11 APPROACH TO SUSTAINABILITY

33..... PART 12 ASSET AND FACILITY MANAGEMENT

ANNEX 3
(Item 3.2)

**CONTENTS OF PART 6 SECTION 7 'PREFABRICATION, SYSTEMS BUILDING
AND MIXED/COMPOSITE CONSTRUCTION:
7A Prefabricated Concrete' OF NBC**

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4 MODULAR COORDINATION, ARCHITECTURAL TREATMENT AND FINISHES

5 COMPONENTS

6 PREFABRICATION SYSTEMS AND STRUCTURAL SCHEMES

7 DESIGN CONSIDERATIONS AND REQUIREMENTS

8 JOINTS

9 TESTS FOR COMPONENTS/STRUCTURES

**10 MANUFACTURE, STORAGE, TRANSPORT AND ERECTION OF PRECAST
ELEMENTS**

11 EQUIPMENT

12 PREFABRICATED STRUCTURAL UNITS

ANNEX A COMMON DEFECTS AND REMEDIES

LIST OF STANDARDS

ANNEX 4
(Item 3.2)

**CONTENTS OF PART 6 SECTION 7 'PREFABRICATION, SYSTEMS BUILDING
AND MIXED/COMPOSITE CONSTRUCTION:
7B Systems Building and Mixed/Composite Construction' OF NBC**

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13 PREFABRICATED STRUCTURAL UNITS

ANNEX A CONSTRUCTION PRACTICE FOR DECKING

ANNEX B CONSTRUCTION PRACTICE FOR CONCRETING ON DECKING

LIST OF STANDARDS
